REMARKS

The Examiner has indicated that claims 1 and 4-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

The Examiner has indicated that claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

The Examiner has indicated that claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner has indicated that claims 1, 4-8, and 17-20 are rejected under 35 U.S.C. 103(a), as being unpatentable over Hervert PED 219 Chapter 14 Notes in view of Stubbs, *et al.* US 6,736,759.

Applicant respectfully traverses the § 112 and § 103 rejections with the following arguments.

35 U.S.C. § 112 – Claims 1 and 4-8

The Examiner has rejected claims 1 and 4-8 under 35 U.S.C., first paragraph, as failing to comply with the enablement requirement. The Examiner has asserted that "Claim 1 is directed toward *"determining if a subject is trainable with respect to the performance of a given activity"*. The limitation of "determining" implies that a finite step-by-step procedure needs to be established in order to reach a determination or a decision. The specification fails to provide distinct criteria that need to be assessed in order to arrive at such decision." Applicant respectfully disagrees.

The specification defines *trainable* as "affected by training" (see page 8, line 7) and further gives an example of a trainable subject as "an entity that both responds to or measures in some way an external environmental effect on the entity; and, then the subject 18 has some capability of retaining memory of the cumulation of these external environmental effects. Thus, the subject 18 may be an individual human, a team or group of humans such as a running team, an animal, a group of animals, a cellular automata, a group of cellular automata, a virus programs, microorganism cultures, microbes, plants, a piece of material, a computer program and data, etc." See page 8, line 20 to page 9, line 7. Thus a user of the present invention may determine if a subject is trainable by observing or determining if the subject is affected by training.

An example of a user of the present invention determining or observing if a subject is trainable is illustrated in the specification in FIG. 2A and FIG. 2B, and discussed on page 12, line 5 to page 13, line 18, where "The graph of FIG. 2A illustrates the treadmill speed 66 being increased while a physical parameter 34, such as heart rate, is measured. In this example, as the treadmill speed 66 is increased, the heart rate varies approximately (within tolerance) linearly

with treadmill speed in a state of accommodation 68." See page 12, lines 13-19. The treadmill movement is an environmental effect on the subject as the subject runs or walks to keep pace with the moving belt. Training on the treadmill is described in part on page 13 lines 4-7, wherein it states "As the treadmill speed 66 is increased beyond the point of efficiency 70, the physical parameter 34 (e.g., heart rate, etc.) notably changes along the graph line 72." The subject then is determined to be trainable as the subject responds to the training as described on page 13 lines 13-15 wherein it states "As the subject 18 trains, the point of efficiency 70 moves to higher and higher speeds as illustrated in the point of efficiencies 70C, and 70D (FIG. 2A)." In this example, the subject is determined to be effected by the training on the treadmill as demonstrated by the change in the point of efficiency.

The specification illustrates another example of a subject being affected by training in FIG. 3 and describes in the specification on page 15, lines 8-12, a runner training on a treadmill moving at a constant rate where "as the subject 18 trains and builds up more capacity, the point of efficiency 70A moves to, in this case, longer and longer lengths of times 74 (i.e., moves in some direction along the parameter graph) as illustrated in point of efficiencies 70E, and 70F." In this example, the subject is determined to be affected by the treadmill training by the movement of the point of efficiency.

In another example, a subject is trained on a treadmill as described on page 18, lines 14-15 which state "The subject 18 is further trained by repeating steps 96 through 112 of FIG. 5." The method described in FIG. 5 is a step-by-step procedure for determining a point of efficiency, where "As the subject 18 trains and builds up more capacity, the point of efficiency 70A moves to longer and longer lengths of times 74 as illustrated in point of efficiencies 70E and 70F (FIG.

3)". A user of the present invention using the steps of FIG. 5 would determine if a subject is trainable (affected by training) by the movement of the subject's point of efficiency.

For the reasons stated above, applicant respectfully asserts that claim 1 is allowable. Likewise, applicant asserts that claims 4-8, as dependent from claim 1, are also allowable. Therefore applicant respectfully requests the withdrawal of rejections under 35 U.S.C. 112, first paragraph of claims 1 and 4-8.

35 U.S.C. § 112 – Claim 8

The Examiner has indicated that claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The Examiner has asserted "The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 8 is directed toward training with respect to inanimate objects of computer program and data. The specification recites that this step in enabled for an adaptive computer program by finding a "resonance point" of the system. The specification fails to provide how the determination of such "resonance point" can be reached." Applicant respectfully disagrees.

Claim 8, as dependent from claim 1, claims *inter alia*, "determining a point of efficiency of said subject with respect to at least one parameter" and "training said subject at or near said point of efficiency with respect to a state of accommodation until a state of inefficiency with respect to said at least one parameter or exhaustion occurs." Claim 8 claims "The method of claim 1, wherein the subject is selected from the group consisting of an animal, a human, a group

of humans, a group of animals, a cellular automata, a group of cellular automata, microbes, plants, and a computer program and data."

The specification describes training a computer program in the paragraph bridging pages 21 and 22 which states "Another embodiment utilizing the inventive method is for training an adaptive computer program. Similar to the aforementioned bacterial training, the method employed would be to find a resonance point (i.e., the maximum output for a given input) in the system to be trained. The training effect (i.e. output) is maximized for the effort expended by the subject and trainer (i.e., input)." The maximum output may be determined from a graph of performance against input such as in FIG. 2B, for example, which illustrates a maximum output (turnover rate) versus treadmill speed for a runner. A point of efficiency 70 may exist, beyond which "the subject's 18 body and/or emotions and mind, measured through the body, no longer can accommodate additional stress and enters a state of inefficiency causing the physical parameters 34 to vary differently (e.g., more rapidly change, less rapidly change) than before." See page 13, lines 7-12. Therefore, the point of efficiency "is the maximum value of, in the case of FIG. 2A, the speed of the treadmill whereby the state of accommodation is maintained." See page 13, lines 15-18. A user of the present invention would perform the method of claim 8 with regard to a computer program and data according to the description set forth in the specification.

In the example of the microbes, the microbes may be subjected to an input such as exposure "to increasing levels of a hostile environmental factor until a dramatic change in the die-off of the culture happens. The point of efficiency 70, which is this point, is where the culture will be optimally adaptive." See page 21, lines 3-8. The maximum output (the die-off rate) for the given input (hostile environmental factor) is used in this example to determine the point of efficiency.

In another example, a human may be trained to perform mathematical calculations wherein "the rate of delivering the sums to the subject 18 is increased until the subject 18 cannot answer the sum before the next sum is displayed. By way of example, if the subject's 18 point of efficiency is found to be 1 sum per second and the subject 18 can only answer 10 sums before failure, the subject 18 is trained at that rate." See page 20, lines 3-9. In this example, the maximum output (rate of delivering the sums) is determined for a given input (mathematical calculations). Similarly, a user of the present invention as claimed in claim 8 may determine a point of efficiency for, for example, an adaptive computer program to perform complex computations.

For the reasons stated above, applicant respectfully asserts that claim 8 is allowable. Therefore applicant respectfully requests the withdrawal of the rejection under 35 U.S.C. 112, first paragraph of claim 8.

35 U.S.C. § 112 – Claim 18

The Examiner has indicated that claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner has asserted "Claim 18 recites "wherein the at least *one parameter is* a physical parameter", this *"one parameter"* may be interpreted as the subject's parameter or the parameter of performance systems. For the purpose of the search and examination of this office action, the examiner presumes *"one parameter"* in this case to be directed toward the subject and not directed toward the performance system." Applicant respectfully disagrees and asserts that amended claim 18 directs "the at least one parameter" towards the subject, wherein claim 18 claims, *inter alia*, "The method of claim 17,

wherein the at least one parameter of the subject is a physical parameter". Emphasis added. Applicant therefore respectfully requests the withdrawal of rejections under 35 U.S.C. 112 of claim 18.

35 U.S.C. § 103(a)

The Examiner has indicated that claims 1, 4-8, and 17-20 are rejected under 35 U.S.C. 103(a), as being unpatentable over Hervert PED 219 Chapter 14 Notes in view of Stubbs, *et al.* US 6,736,759. Examiner has asserted "it would have been obvious at the time of the invention to combine the training method disclosed by Hervert with the training apparatus of Stubbs`759. One of ordinary skilled in the art would have been motivated to make this combination since it would enable a user practicing the training method disclosed by Hervert to know exactly when his/her body is exhausted as explained by the teaching of Stubbs `759 (Stubbs `759 Col 27:4-20 and Stubbs`759 Col 4:1-8)." Applicant respectfully disagrees.

Claim 1 of the present invention claims, *inter alia*, "training said subject at or near said point of efficiency with respect to a state of accommodation until a state of inefficiency with respect to said at least one parameter or exhaustion occurs." The disclosure of Hervert describes a training method which trains "at a level *above* normal so body changes occur that improve efficiency". Emphasis added, see page 1, under heading 1 labeled "Overload". Hervert defines his training method as an overload method, training far beyond any efficiency points, and therefore does not describe training at or near a point of efficiency as claimed, *inter alia*, in claim 1 of the present invention. For example, the training of Hervert consists of "bursts of up to 60 seconds of intense running" followed by "3-5 minutes of recovery", see page 2, under heading 2. Respectfully, Hervert does not describe training with respect to blood lactate levels, only training with respect to set time increment (see above). Although, Hervert does provide a general theory regarding blood lactate levels (see page 2, before heading "Aerobic Training"), no such levels are measured during the training described by Hervert. As asserted by the Examiner, Hervert is silent with respect to "determining if a subject is trainable with respect to the performance of a

given activity" and "determining a point of efficiency of said subject with respect to at least one parameter" as claimed, *inter alia*, in claim 1 of the present invention. Thus, a user combining the teachings of Hervert and Stubbs would not be led to the present invention, as Hervert does not teach any of the elements of the invention claimed in claim 1 of the present invention.

Claim 1 of the present invention claims, *inter alia*, "determining if a subject is trainable with respect to the performance of a given activity". As discussed above, the specification of the present invention defines *trainable* as "affected by training" (see page 8, line 7). Respectfully, The patent to Stubbs is silent with regard to such a determination. No determination is made in the disclosure of Stubbs to determine if the subject is affected by training, i.e. trainable. Although Stubbs discloses measuring blood lactate levels, the disclosed use of such information is to explain why a subject may stop the currently running training program. See column 25, lines 44-49 which state, " At this point (often referred to as the "lactate threshold" or "LT"), lactic acid will begin to accumulate in the working muscles, eventually leading to muscle failure. If the subject continues to perform at a level of exertion above LT, it is only a matter of time until the working muscles begin to fail and the subject must stop." Thus, a user combining the teachings of Hervert and Stubbs would not be led to the present invention, as neither Stubbs nor Hervert teach "determining if a subject is trainable with respect to the performance of a given activity".

In addition, the disclosure of Stubbs does not teach "training said subject at or near said point of efficiency with respect to a state of accommodation until a state of inefficiency with respect to said at least one parameter or exhaustion occurs". Although Stubbs discloses estimating a subjects lactate threshold (see Stubbs col. 26, lines 50-53), respectfully, Stubbs is silent with regard to teaching training at or near any such point. Stubbs provides only general

statements of use for lactate and oxygen levels in the blood without regard to how those levels relate to a point of efficiency, such as "if a marathoner knows their appropriate blood oxygen level for completing a marathon, they can monitor their blood oxygen level during the race in order to ensure that their blood oxygen level does not exceed or fall below their target level." See col. 26, lines 20-24, wherein Stubbs refers to use of the Stubbs device in a race rather than during training. Stubbs is silent with reference to ""training said subject at or near said point of efficiency with respect to a state of accommodation until a state of inefficiency with respect to said at least one parameter or exhaustion occurs".

The Examiner has asserted "One of ordinary skilled in the art would have been motivated to make this combination since it would enable a user practicing the training method disclosed by Hervert to know exactly when his/her body is exhausted as explained by the teaching of Stubbs `759 (Stubbs `759 Col 27:4-20 and Stubbs`759 Col 4:1-8)." Applicant respectfully disagrees. Column 4, lines 1-8 disclose an oxygen monitoring system of Stubbs which consists of " a. an oximeter configured to determine a subject's blood oxygen level; b. a display unit configured for displaying the subject's blood oxygen level; and c. an alarm, wherein the alarm is activated when the subject's blood oxygen level does not meet a predetermined target." Column 27, line 4-20 discloses a method for "determining a fitness indicator (such as LT)", where "once the test protocol has been completed, the system will calculate the subject's LT (or other fitness indicator) on the basis of the acquired workload and blood oxygen data." The disclosure of Hervert teaches overload training based on solely timed increments of training (see page 2 of Hervert under "Training the system"), without measurement of lactate levels. For example, the training of Hervert relies on timed "bursts of up to 60 seconds of intense running". A user of Hervert would be unable to use the teachings or measurements of Stubbs since Hervert requires

no such measurements and instead uses time increments to determine training and not levels of exhaustion. Likewise neither Stubbs nor Hervert contain a suggestion to incorporate a measurement to determine when a subject is exhausted. In addition, a user combining the disclosure of Stubbs with the disclosure of Hervert would not be led to the present invention, as the asserted combination would not lead a user to determining if a subject is trainable with respect to the performance of a given activity, or training said subject at or near said point of efficiency with respect to a state of accommodation until a state of inefficiency with respect to said at least one parameter or exhaustion occurs, as stated above.

The Examiner has asserted "with respect to dependent claim 4, where one of the parameter is at least of a physical parameter. Hervert discloses that the subject is trained with respect to his/her physical parameter of blood lactate levels." Applicant respectfully disagrees. Hervert teaches "overload" training, where a subject trains far beyond a point of efficiency. As discussed above, Hervert that the subject is trained with respect to time, and does not train the subject at or near a point of efficiency until a state of inefficiency with respect to at least one parameter or exhaustion occurs.

The Examiner has asserted with respect to claim 5 "Hervert discloses that the subject is trained with respect to his/her chemical activity profile in the form of the blood lactate levels." Applicant respectfully disagrees. As stated above, Hervert teaches training with respect to time and does train with respect to lactate threshold levels. Each example provided by Hervert specifies a time increment for training. For example, page 2, under heading 1, Hervert states "You can train by this: A. sets of sprinting all out for 6-10 seconds, with 30-60 seconds of rest in between. B. sled blocking for up to 10 second intervals with the same rest recovery." The

training of Hervert discloses no use for determining blood lactate levels, as Hervert solely uses time increments for training.

The Examiner has asserted with respect to claim 6 "Hervert discloses that the subject is trained with respect to his/her metabolic rate in the form of the blood lactate levels". Applicant respectfully disagrees. As stated above, Hervert only discloses training related to time increments. For example, page 3 under heading c states "Duration of training-20-30 minutes each session. It can be a straight job or 8-10 2 minute intervals of hard running." The training of Hervert discloses no use for determining blood lactate levels or metabolic rate, as Hervert solely uses time increments for determining training.

The Examiner has asserted with respect to claim 7 " Stubbs `759 teaches of a system where the subject's velocity, pace and heading (physical motion or movement) are observed through the use of a GPS device (Stubbs `759 Col. 9:16-30). Therefore, it would have been obvious at the time of the invention to combine the training method disclosed by Hervert with the training apparatus of Stubbs `759. One of ordinary skilled in the art would have been motivated to make this combination since it would enable a user to monitor, control and/or analyze their performance while exercising at any location (e.g., outside of a laboratory) (Stubbs `759 Col.7:1-5). Applicant respectfully disagrees. Claim 7 of the present invention claims, *inter alia*, " The method of claim 4, wherein the at least one parameter is observed by a signal selected from the group of verbal utterance, physical motion." Claim 4 of the present invention claims, *inter alia*, "The method of claim 1, wherein the at least one parameter is one of a physical parameter, emotional parameter, and mental parameter of the subject." A combination of the GPS device of Stubbs and the teachings of Hervert would not lead a user to the present invention because neither Hervert or Stubbs teach "training said subject at or near said point of efficiency

with respect to a state of accommodation until a state of inefficiency with respect to said at least one parameter or exhaustion occurs", as claimed, *inter alia*, in claim 1 of the present invention. In addition, while the GPS device of Stubbs may allow a user of Stubbs to "control and/or analyze their performance while exercising at any location" (See col. 7, lines 2-3), a user would not be able to use this device with the teachings of Hervert, as Hervert has no use for location or exact pace of the subject since Hervert only uses time increments as discussed above.

Examiner has asserted with respect to claim 8 that "Hervert's disclosure is directed to the realm of physical education in order to discuss *"normal human physiological function and how it is altered and restored in response to exercise and training"*. Applicant respectfully disagrees, and asserts that the phrase quoted by the Examiner does not appear in the cited reference to Hervert. Applicant respectfully requests clarification of the Examiner's position with regard to the rejection of claim 8.

Examiner has asserted with respect to claim 17 of the present invention that "it would have been obvious at the time of the invention to combine the training method disclosed by Hervert with the training apparatus of Stubbs`759. One of ordinary skilled in the art would have been motivated to make this combination since it would enable a user practicing the training method disclosed by Hervert to know exactly when his/her body is exhausted as explained by the teaching of Stubbs `759 (Stubbs `759 Col 27:4-20 and Stubbs`759 Col 4:1-8)." Applicant respectfully disagrees.

As stated above, Hervert discloses a time interval method for training which relies on specific increments of time, for example on page 6, third to last paragraph, which states "Relief interval training: for sprinters 1:3. Sprint 10 seconds, rest 30. For activities of 60-90 second work: rest is 90-120 seconds (1:1.5)". Respectfully, as shown here and above, Hervert has no

training based with respect to measured blood lactate levels, as asserted by the Examiner. The Examiner has asserted Hervert teaches a "mixture of high (burst of intense running) and low (sled drills)" intensity training, which is directly contrary to the present invention which claims, *inter alia*, in claim 17 " training the subject at or near the point of efficiency so the duration the subject can maintain the point of efficiency changes". Hervert, as discussed above, discloses "overload" training which trains far above any point of efficiency, which is contradictory to the present invention. A point of efficiency 70A is depicted in FIG. 3 of the present invention, which is located at a maximum for a period of accommodation 68A. "In this state of accommodation 68A, the subject's body 18 is adjusting to the stress of exercising over the length of time 74." "In this state of accommodation 68A, the subject's body 18 is adjusting to the stress of exercising over the length of time 74. As time increases, a point of efficiency 70A is reached. Above the point of efficiency 70A, the subject 18 no longer can accommodate additional stress and enters a state of inefficiency causing the physical parameters 34 to markedly change." See specification page 14, lines 14-22.

The Examiner has asserted that "Stubbs `759 also records the parameter of the performance system by recording the blood oxygen level as a parameter during the exercise period (Stubbs `759 Col 5:65-67)". Applicant respectfully disagrees. The exercise monitoring system of Stubbs may record blood oxygen levels while a subject is exercising however, respectfully, the blood oxygen levels recorded in Stubbs are a parameter of the subject, not the performance system. The present invention claims in claim 17, *inter alia*, "determining an at least one point of efficiency parameter by changing the at least one parameter *of the performance system*". Emphasis added. The disclosure of Stubbs may present a monitoring system for monitoring parameters of a subject, whereas the present invention teaches a performance system

as shown in FIG. 1 of the specification of the present invention which may include "a treadmill apparatus 12 and a control system 14" (see page 9, lines 10-11), where "the computer 24 may control the speed of the belt 16 on the treadmill apparatus 12 by sending speed commands (i.e., system parameters) through a cable 42". See specification, page 11, lines 2-4. Respectfully, Stubbs is silent with regard to performance system parameters, and therefore does not teach "determining an at least one point of efficiency parameter by changing the at least one parameter of the performance system", as claimed, *inter alia*, in claim 17 of the present invention.

As asserted by the Examiner, the reference to Hervert does not disclose providing a performance system, activating the performance system, recording at least one parameter of the performance system, measuring at least one parameter of a subject, or determining an at least one point of efficiency parameter by changing the at least one parameter of the performance system until the at least one parameter of the subject substantially changes beyond a given tolerance function, as claimed, *inter alia,* in claim 17 of the present invention, therefore a user of the disclosure of Stubbs would not be led to the present invention by combining with the disclosure of Hervert.

The Examiner has asserted with regard to claim 18, "Hervert discloses that the subject is trained with respect to his/her physical parameter of blood lactate levels." Applicant respectfully disagrees. Claim 18 of the present invention claims, *inter alia*, "The method of claim 17, wherein the at least one parameter of the subject is a physical parameter". As discussed above, Hervert discloses training based with respect to time increments, rather than blood lactate levels. Therefore, for the reasons stated above, claim 18 of the present invention is allowable over Hervert in view of Stubbs.

The Examiner has asserted "With respect of dependent claim 19, where one of the physical parameter selected is the chemical activity profile. Hervert discloses that the subject is trained with respect to his/her chemical activity profile in the form of the blood lactate levels." Applicant respectfully disagrees. Claim 19 of the present invention claims, *inter alia*, "The method of claim 18, wherein the physical parameter is selected from the group consisting of running turnover rate, stride length, stride strike force, muscle contraction speed, muscle contraction profile, muscle contraction strength, electromagnetic activity profile, chemical activity profile, body temperature, and blood pressure." As discussed above, the disclosure of Hervert teaches training based on time increments, rather than blood lactate levels, and therefore based on the reason stated above, claim 19 is allowable over Hervert in view of Stubbs.

The Examiner has asserted "With respect to dependent claim 20, where one of the physical parameter selected is the metabolic rate. Hervert discloses that the subject is trained with respect to his/her metabolic rate in the form of the blood lactate levels." Applicant respectfully disagrees. Claim 20 of the present invention claims, *inter alia*, "The method of claim 18, wherein the physical parameter is selected from the group consisting of heart rate, heart beat strength, respiration rate, VO_2, perspiration rate, metabolic rate, blood flow, breathing rate, and breath length." As discussed above, the disclosure of Hervert teaches training based on time increments, rather than on blood lactate levels. Hervert is silent with regard to training with respect to metabolic rate, and therefore for the reasons stated above, claim 20 of the present invention is allowable over Hervert in view of Stubbs.

For the reasons stated above, applicant respectfully asserts that claims 1, 4-8, and 17-20 are allowable. Therefore applicant respectfully requests the withdrawal of the rejection under 35 U.S.C. 112, first paragraph of claims 1, 4-8, and 17-20.

Declaration under 37 C.F.R. 1.131

Applicant respectfully submits a declaration under 37 C.F.R. 1.131 swearing behind the reference to Hervert as submitted by the Examiner. The claims of the present invention were conceived prior to the date of the reference to Hervert (July 29, 2003), and therefore the claims of the present invention are patentable over the disclosure of Hervert in view of Stubbs. Applicant therefore respectfully requests the withdrawal the Examiners rejections of claims 1, 4-8, and 17-20 under 35 U.S.C. 103(a).

CONCLUSION

Based on the preceding arguments, Applicant respectfully believes that all pending claims and the entire application meet the acceptance criteria for allowance and therefore requests favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invites the Examiner to contact Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 19-0513.

Date: March 14, 2007

/Jon M. Skelly/

Jon M. Skelly
Registration No. 58,108
Customer No. 5409
Schmeiser, Olsen & Watts
22 Century Hill Drive
Latham, New York 12110
Tel. (518) 220-1850